WHAT IS CLAIMED IS:

1. A cell population cultured *ex-vivo* in a culture medium under conditions permitting cells of said cell population to proliferate and, at the same time, reducing a capacity of said cells in utilizing cooper, said cells are hence expanded yet not further differentiated as compared to *ex-vivo* seeded cells from which said cell population developed.

2. The cell population of claim 1, in said medium.

3. The cell population of claim 1, isolated from said medium.

4. A pharmaceutical composition comprising the cell population of claim 1.

5. A pharmaceutical composition comprising the cell population of claim 3.

6. The cell population of claim 1, wherein said deeded cells are hematopoietic cells.

7. The cell population of claim 6, wherein said seeded cells are hematopoietic stem or progenitor cells.

8. The cell population of claim 6, wherein said hematopoietic cells are from a source selected from the group consisting of peripheral blood, bone marrow and neonatal umbilical cord blood.

9. The cell population of claim 1, wherein said seeded cells are enriched for hematopoietic CD_{34}+ cells.

10. The cell population of claim 1, wherein said seeded cells are selected from the group consisting of non-differentiated stem cells and committed progenitor cells.

11. The cell population of claim 1, wherein said seeded cells are embryonic stem cells.

12. The cell population of claim 1, wherein said seeded cells are stem cells.

13. The cell population of claim 1, wherein said seeded cells are enriched for stem cells.

14. The cell population of claim 1, wherein said seeded cells are enriched for progenitor cells.

15. The cell population of claim 1, wherein said seeded cells are enriched for stem and progenitor cells.

16. The cell population of claim 1, wherein said seeded cells are selected from the group consisting of hematopoietic cells, neural cells and oligodendrocyte cells, skin cells, hepatic cells, embryonic stem cells, plant cells, muscle cells, bone cells, mesenchymal cells, pancreatic cells, chondrocytes and stroma cells.

17. The cell population of claim 1, wherein said culture medium comprises a transition metal chelator having an affinity for copper in an amount sufficient for providing said conditions for permitting said cells of said cell population to proliferate and, at the same time, for reducing said capacity of said cells in utilizing cooper.

18. The cell population of claim 17, wherein said transition metal chelator is selected from the group consisting of polyamine chelating agents, ethylendiamine, diethylenetriamine, triethylenetetramine, triethylenediamine, tetraethylenepentamine, aminoethylethanolamine, aminoethylpiperazine, pentaethylenehexamine, triethylenetetramine-hydrochloride, tetraethylenepentamine-hydrochloride, pentaethylenehexamine-hydrochloride, tetraethylpentamine, captopril, penicilamine, N,N'-bis(3-aminopropyl)-1,3-propanediamine, N,N,Bis (2 animoethyl) 1,3 propane diamine, 1,7-dioxa-4,10-diazacyclododecane, 1,4,8,11-tetraaza cyclotetradecane-5,7-dione, 1,4,7-triazacyclononane trihydrochloride, 1-oxa-4,7,10-triazacyclododecane, 1,4,8,12-tetraaza cyclopentadecane, 1,4,7,10-tetraaza cyclododecane.

19. The cell population of claim 17, wherein said culture medium comprises nutrients and cytokines.

20. The cell population of claim 19, wherein said cytokines are early acting cytokines.

21. The cell population of claim 20, wherein said early acting cytokines are selected from the group consisting of stem cell factor, FLT3 ligand, interleukin-6, thrombopoietin and interleukin-3.

22. The cell population of claim 19, wherein said cytokines are late acting cytokines.

23. The cell population of claim 22, wherein said late acting cytokines are selected from the group consisting of granulocyte colony stimulating factor, granulocyte/macrophage colony stimulating factor and erythropoietin.

24. The cell population of claim 1, wherein said culture medium comprises zinc in an amount sufficient for providing said conditions for permitting said cells of said cell population to proliferate and, at the same time, for reducing said capacity of said cells in utilizing cooper.

25. A cell population cultured *ex-vivo* in a culture medium and having a reduced intracellular copper content as compared to *ex-vivo* seeded cells from which said cell population developed.

26. The cell population of claim 25, in said medium.

27. The cell population of claim 25, isolated from said medium.

28. A pharmaceutical composition comprising the cell population of claim 25.

29. A pharmaceutical composition comprising the cell population of claim 27.

30. The cell population of claim 25, wherein said cells are expanded yet not further differentiated as compared to said *ex-vivo* seeded cells from which said cell population developed.

31. The cell population of claim 25, wherein said deeded cells are hematopoietic cells.

32. The cell population of claim 31, wherein said seeded cells are hematopoietic stem or progenitor cells.

33. The cell population of claim 31, wherein said hematopoietic cells are from a source selected from the group consisting of peripheral blood, bone marrow and neonatal umbilical cord blood.

34. The cell population of claim 25, wherein said seeded cells are enriched for hematopoietic $CD_{34}+$ cells.

35. The cell population of claim 25, wherein said seeded cells are selected from the group consisting of non-differentiated stem cells and committed progenitor cells.

36. The cell population of claim 25, wherein said seeded cells are embryonic stem cells.

37. The cell population of claim 25, wherein said seeded cells are stem cells.

38. The cell population of claim 25, wherein said seeded cells are enriched for stem cells.

39. The cell population of claim 25, wherein said seeded cells are enriched for progenitor cells.

40. The cell population of claim 25, wherein said seeded cells are enriched for stem and progenitor cells.

41. The cell population of claim 25, wherein said seeded cells are selected from the group consisting of hematopoietic cells, neural cells and oligodendrocyte cells, skin cells, hepatic cells, embryonic stem cells, plant cells, muscle cells, bone cells, mesenchymal cells, pancreatic cells, chondrocytes and stroma cells.

42. The cell population of claim 25, wherein said culture medium comprises a transition metal chelator having an affinity for copper in an amount sufficient for reducing said intracellular copper content as compared to said *ex-vivo* seeded cells from which said cell population developed.

43. The cell population of claim 42, wherein said transition metal chelator is selected from the group consisting of polyamine chelating agents, ethylendiamine, diethylenetriamine, triethylenetetramine, triethylenediamine, tetraethylenepentamine, aminoethylethanolamine, aminoethylpiperazine, pentaethylenehexamine, triethylenetetramine-hydrochloride, tetraethylenepentamine-hydrochloride, pentaethylenehexamine-hydrochloride, tetraethylpentamine, captopril, penicilamine, N,N'-bis(3-aminopropyl)-1,3-propanediamine, N,N,Bis (2 animoethyl) 1,3 propane diamine, 1,7-dioxa-4,10-diazacyclododecane, 1,4,8,11-tetraaza cyclotetradecane-5,7-dione, 1,4,7-triazacyclononane trihydrochloride, 1-oxa-4,7,10-triazacyclododecane, 1,4,8,12-tetraaza cyclopentadecane, 1,4,7,10-tetraaza cyclododecane.

44. The cell population of claim 42, wherein said culture medium comprises nutrients and cytokines.

45. The cell population of claim 44, wherein said cytokines are early acting cytokines.

46. The cell population of claim 45, wherein said early acting cytokines are selected from the group consisting of stem cell factor, FLT3 ligand, interleukin-6, thrombopoietin and interleukin-3.

47. The cell population of claim 44, wherein said cytokines are late acting cytokines.

48. The cell population of claim 47, wherein said late acting cytokines are selected from the group consisting of granulocyte colony stimulating factor, granulocyte/macrophage colony stimulating factor and erythropoietin.

49. The cell population of claim 25, wherein said culture medium comprises zinc in an amount sufficient for sufficient for reducing said

intracellular copper content as compared to said *ex-vivo* seeded cells from which said cell population developed.

50. A cell population cultured *ex-vivo* in a culture medium and having an increased intracellular copper content as compared to *ex-vivo* seeded cells from which said cell population developed.